

Notice of Allowability

Application No.

10/671,570

Examiner

Richard Hanig

Applicant(s)

WHITEHEAD ET AL.

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Ex. interview of 10/14/04.
2. ☒ The allowed claim(s) is/are 12-20.
3. ☒ The drawings filed on 23 September 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

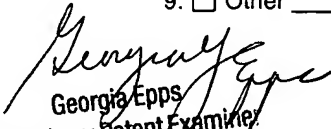
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 09/24/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 08/10/04 and 10/14.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.


Georgia Epps
Supervisory Patent Examiner
Technology Center 2800

DETAILED ACTION

1) An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Blake Wiggs on 10/14/04. It should be noted that in an interview with Mr. Wiggs on 08/10/04, it was agreed upon that claims 5-11 should be cancelled because they correspond to claims 31-37 of the parent application 10/086,349 and belonged to Group III of restriction requirement of 08/13/03. These claims (31-37) will be rejoined to application 10/086,349 and assigned to Group I of that restriction.

The application has been amended as follows:

In The Specification

Delete the text from section [0013].

In The Claims

Cancel claims 1-11.

Add the following new claims:

12. (New) A reflective display, comprising:
 - (a) a plurality of transparent hemi-beads substantially covering and protruding inwardly from an inward surface of a transparent sheet;

Art Unit: 2873

- (b) means for selectably moving a member into an intense evanescent wave region at an inward side of the hemi-beads to selectably frustrate substantial total internal reflection of light rays at the inward side;

wherein:

- (c) outwardmost regions of the hemi-beads are substantially hexagonal;
- (d) inwardmost regions of the hemi-beads are approximately spherical;
- (e) first intermediate regions of the hemi-beads close to the outwardmost region are more approximately hexagonal than second intermediate regions of the hemi-beads which are farther from the outwardmost region than the first intermediate regions; and
- (f) third intermediate regions of the hemi-beads close to the inwardmost region are more approximately spherical than a fourth intermediate region of the hemi-beads which is farther from the inwardmost region than the third intermediate regions.

13. (New) A reflective display as defined in claim 12, wherein:

- (a) the hemi-beads have a refractive index n_1 ; and
- (b) the transparent sheet has a refractive index n_2 and has an outward viewing surface.

14. (New) A reflective display as defined in claim 12, the transparent sheet further comprising a nano-composite structure of high refractive index particles suspended in a polymer.

15. (New) A display as defined in claim 12, wherein a first surface normal at substantially any selected point on substantially any selected one of the hemi-beads differs in direction by an angle ϵ from a second surface normal at a notional point on a notional perfect hemisphere superimposed on the selected one of the hemi-beads, the notional perfect hemisphere and the selected one of the hemi-beads having a substantially equal

size, the notional point being the point on the notional perfect hemisphere which is closest to the selected point, and wherein ϵ is less than a predefined value.

16. (New) A display as defined in claim 12, wherein the hemi-beads are approximately hemispherical portions of approximately spherical members partially embedded in the transparent sheet.
17. (New) A display as defined in claim 12, wherein the hemi-beads are approximately hemispherical members affixed to the inward surface of the transparent sheet.
18. (New) A display as defined in claim 13, wherein $\eta_1 \approx \eta_2$.
19. (New) A display as defined in claim 12, wherein the hemi-beads are shaped to minimize gaps between outwardmost portions of adjacent ones of the hemi-beads.
20. (New) A display as defined in claim 12, wherein:
 - (i) the transparent sheet further comprises a nano-composite structure of high refractive index particles suspended in a polymer; and
 - (ii) the hemi-beads are shaped to minimize gaps between outwardmost portions of adjacent ones of the hemi-beads.

2) The following is an examiner's statement of reasons for allowance: Reference 6304365 in fig. 9C discloses a parabolic structure that has certain design choice advantages (col. 14, lines 40-55), however, the instant claimed invention has a hemi-bead hexagonal structure that

Art Unit: 2873

minimizes the gaps between the outwardmost portions of adjacent hemi-beads, and is a non-obvious improvement over the parent application.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Hanig whose telephone number is 571-272-2329. The examiner can normally be reached on M-F: 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R.A.
10/15/04


Georgia Epps
Supervisory Patent Examiner
Technology Center 2800